

# **EXHIBIT 1**

RECEIPT # 3132  
 AMOUNT \$ 150  
 SUMMONS ISSUED 1  
 LOCAL RULE 4.1 \_\_\_\_\_  
 WAIVER FORM \_\_\_\_\_  
 MCF ISSUED \_\_\_\_\_  
 BY DPTY. CLK. JS  
 DATE 6-9-04

IN THE UNITED STATES DISTRICT COURT  
 FOR THE DISTRICT OF MASSACHUSETTS

ARTESYN NORTH AMERICA, INC.,

Plaintiff,

vs.

GALAXY POWER, INC.,

Defendant.

Case No.:

**04-10727 REK**

MAGISTRATE JUDGE Collins

**COMPLAINT**

Artesyn North America, Inc., ("Artesyn"), by and through its undersigned counsel, files this Complaint against Defendant Galaxy Power, Inc. ("Galaxy"), averring as follows:

**NATURE OF THE ACTION**

1. In 1994, Galaxy and Zytec Corporation (now Artesyn) entered into a Product Development and License Agreement (the "Agreement," which is attached as Exhibit A and incorporated herein by reference). Pursuant to the Agreement, and in exchange for substantial cash payments, Galaxy licensed certain technology to Artesyn and agreed to indemnify and defend Artesyn against any claims brought against Artesyn involving allegations that the licensed technology infringes the intellectual property rights of a third party.

2. In April of 2001, Vicor Corporation ("Vicor") and its wholly owned licensing subsidiary, VLT, Inc. ("VLT"), filed suit at No. 01-10238-PBS (D. Mass.) (the "VLT Action"), asserting that Artesyn's products incorporating the licensed Galaxy technology allegedly infringed a patent owned by VLT. Despite repeated requests by Artesyn that Galaxy honor its obligations to defend and indemnify Artesyn against VLT's claims, Galaxy has refused to do so.

3. By this action, Artesyn seeks (i) damages arising from Galaxy's breach of its obligations to defend and indemnify Artesyn pursuant to the Agreement and (ii) a declaration that the Agreement covers ongoing defense costs and any liability imposed upon Artesyn as a result of the VLT action.

#### **THE PARTIES**

4. On March 24, 1998, Zytec Corporation ("Zytec") changed its name to Artesyn North American, Inc. and, later that year, was merged into a new Delaware corporation of the same name. Accordingly, plaintiff Artesyn is now a Delaware corporation with its principal place of business located in Minneapolis, Minnesota.

5. Artesyn is one of the leading suppliers of power conversion products and communications subsystems to the computing and communications industries.

6. Galaxy is a Massachusetts corporation with its principal place of business at 155 Flanders Road, Westborough, Massachusetts, 01581. Galaxy supplies high current, high-density DC to DC converters to the telecommunications, computer and networking industries.

### **JURISDICTION AND VENUE**

7. This Complaint sets forth claims for declaratory judgment and breach of the Agreement.

8. This Court has jurisdiction over the subject matter of these claims and the parties pursuant to 28 U.S.C. § 1332 because the parties are citizens of different states and the amount in controversy exceeds \$75,000.

9. Venue is proper in this District pursuant to 28 U.S.C. § 1391 because, *inter alia*, (i) Defendant Galaxy's corporate headquarters are located in this District; (ii) Defendant Galaxy is incorporated in this District; (iii) Defendant Galaxy regularly transacts business in this District, including the marketing and sale of its products; and (iv) a substantial part of the events giving rise to the claims alleged herein occurred in this District.

### **THE FACTS**

#### **The License Agreement**

10. On or about December 16, 1994, Galaxy and Zytec entered into the Agreement, whereby Galaxy agreed to license certain technology and products to Zytec, including, *inter alia*, the ORION 150W Module, the STAR 200W Module and the PEGASUS 300W Module (defined in the Agreement as the "Proprietary Products"), along with all design elements of those modules, including the "unique circuits and packaging techniques," any corresponding patents or patent applications (defined in the Agreement as the "Proprietary Rights") and the "know-how" associated with the designs.

11. Galaxy claimed to be the sole and rightful owner of all of the technology and designs it was offering to license and made the following warranties to Zytec:

- a. Galaxy has the right to enter into this Agreement, to grant Zytec the rights and licenses set forth herein, and to perform all obligations of this Agreement;
- b. Execution, delivery, and performance of this Agreement by Galaxy will not constitute a breach of any agreement, judgment, award, law, rule, or regulation to which Galaxy is bound;
- c. Galaxy is the owner of the entire right, title and interest in the Licensed Know-How;
- d. Galaxy has the sole right to grant licenses under the Licensed Know-How and has not previously granted any rights thereunder that would interfere with any rights granted Zytec under this Agreement;
- e. Galaxy is not aware of any facts or circumstances from which it could reasonably be concluded that any of the Licensed Know-How infringes on any patent, copyright, trade secret or other proprietary right of any third party; and
- f. Galaxy is not aware of any facts or circumstances from which it could reasonably conclude that a third party is infringing any of the Licensed Know-How.

12. In consideration for the licensed technology, Zytec agreed to pay Galaxy the total of \$600,000, payable in a number of installments, as certain milestones in the product development and introduction to market were reached.

13. The Agreement contains an indemnification provision, which provides as follows:

Galaxy shall indemnify, hold harmless, and defend Zytec, its agents, officers, and employees against any and all claims made against Zytec, its agents, officers, and employees that use of the Licensed Know-How infringes any license, copyright, trademark, trade secret, patent, or other proprietary right, and hold Zytec, its agents, officers, and employees harmless against all damages, judgments, and attorneys' fees arising out of the foregoing; provided,

however, that Zytec shall give Galaxy prompt written notice of such claims.

14. The Licensed Know-How was defined in the Agreement to include “the Proprietary Rights, together with any improvements, enhancements, updates or other variations of such Proprietary Rights, together with all of Galaxy’s present and future specialized, novel and unique techniques, inventions, practices, knowledge, skill, expertise and other proprietary information relating to the Proprietary Products,” which includes products and technology accused in the VLT Action.

15. The Agreement further provides that it is governed by Minnesota law.

16. By its terms, the Agreement inured to the benefit of and was binding upon Zytec and Galaxy “and their respective heirs, executors, administrators, representatives, sublicenses, successors and assigns.” Accordingly, Artesyn succeeded to all of Zytec’s rights and obligations under the Agreement.

17. Using the technology it licensed from Galaxy and pursuant to the Agreement, Artesyn developed, introduced into market, and continues to sell lines of standard and custom product DC-DC converters (the “Accused Products”).

18. VLT, the purported owner of U.S. Patent Reissue No. 36,098 (the ‘098 Patent), based on U.S. Patent 4,441,146 (the “146 Patent”), has asserted broad claims of patent infringement against numerous companies within the power industry, including Artesyn.

19. Specifically, on April 4, 2001, VLT and Vicor commenced the VLT Action, alleging that certain single ended power converters having the active reset or active clamp design that Artesyn licensed from Galaxy, including the Accused

Products, infringe VLT's '098 Patent. On February 25, 2002, VLT amended its Complaint to, *inter alia*, drop Vicor as a plaintiff and to add Artesyn as a defendant. A copy of the Amended Complaint is attached as Exhibit B.

20. On April 30, 2001, Artesyn informed Galaxy by letter that VLT had filed the VLT Action and that the lawsuit implicated products that were subject to the Agreement. At that time, Artesyn made a formal request that Galaxy indemnify Artesyn for the costs incurred in defending the VLT Action, including attorneys' fees, and any damages or judgments which Artesyn may become legally obligated to pay as the result of any finding of liability in the VLT Action.

21. Despite the unequivocal language of the License Agreement requiring Galaxy to "indemnify, hold harmless, and defend" Artesyn against "any and all claims made against Zytec . . . that use of the Licensed Know-How infringes any . . . patent," Galaxy informed Artesyn on May 24, 2001 that it would not defend or indemnify Artesyn for VLT's claim that the products containing the Galaxy know-how infringed VLT's patent. Nevertheless, Artesyn and Galaxy agreed that Artesyn would withhold the last payment of \$100,000 due under the Agreement. Galaxy later attempted to repudiate that agreement and demanded payment.

22. Artesyn's subsequent requests that Galaxy honor its obligations to defend and indemnify Artesyn in connection with the VLT Action have likewise been met with refusals by Galaxy.

23. As a result of Galaxy's refusal to honor its obligations to indemnify and defend Artesyn for the claims made against Artesyn by VLT, Artesyn has been forced to expend, and continues to expend, substantial costs and attorneys' fees to defend the VLT Action. Additionally, Artesyn may be required to satisfy any settlement amount or amount of judgment resulting from the VLT Action.

24. By this action, Artesyn seeks to recover, *inter alia*, the attorneys' fees and costs it has expended to date to defend the VLT Action. Artesyn also seeks a declaration that Galaxy is liable to Artesyn for the attorneys' fees and costs that Artesyn will expend throughout the remainder of the VLT Action, as well as any amount Artesyn becomes legally obligated to pay as a result of the VLT Action.

## **COUNT I**

### **Breach of Contract**

25. The allegations set forth in the preceding paragraphs are incorporated herein by reference as if fully set forth at length.

26. The Agreement was a valid and enforceable contract between Zytec and Galaxy.

27. Through its express provisions and operation of law, the Agreement inured to the benefit of Artesyn.

28. Artesyn has fully performed its obligations under the Agreement. Specifically, Artesyn has paid Galaxy \$500,000 pursuant to the Agreement. Artesyn and Galaxy had agreed that Artesyn could withhold the only remaining payment of \$100,000 pending resolution of this dispute between the parties, but Galaxy sought to repudiate its agreement when Artesyn continued to press its demands that Galaxy acknowledge and honor its obligations to defend and indemnify. Artesyn's defense costs to date substantially exceed \$100,000. Accordingly, that amount is insufficient to satisfy Galaxy's obligations.



29. Artesyn provided Galaxy with prompt written notice of VLT's infringement claims, including written notice less than 30 days after VLT commenced the VLT Action.

30. By its repeated refusal to fund Artesyn's defense and to acknowledge its obligations to defend and indemnify Artesyn in the VLT Action, Galaxy has breached the Agreement.

31. As a result of Galaxy's breach of contract, as set forth herein, Artesyn has suffered damages and will continue to suffer damages in the form of costs and attorneys' fees associated with its defense of the VLT Action. Additionally, Artesyn may be required to satisfy any settlement amount or amount of judgment resulting from the VLT Action.

## **COUNT II**

### **Declaratory Judgment**

32. The allegations set forth in the preceding paragraphs are incorporated herein by reference as if fully set forth at length.

33. Artesyn contends that Galaxy has a duty to defend and indemnify it in connection with the VLT Action.

34. Galaxy continues to dispute that it is obligated to defend and indemnify Artesyn for future defense costs and/or other obligations that it may incur in connection with the VLT Action.

35. Accordingly, an actual controversy currently exists between Artesyn and Galaxy with respect to Galaxy's duties and obligations under the Agreement.

36. Declaratory relief from this Court will terminate some or all of the disputes and controversies between Galaxy and Artesyn.

37. A judicial declaration is necessary as to the rights of Artesyn and the duties of Galaxy regarding the claims identified herein as well as similar claims that may arise in the future.

38. This Court has authority to grant declaratory relief under the Declaratory Judgment Act, 28 U.S.C. §§ 2201-2202.

**PRAYER FOR RELIEF**

WHEREFORE, Artesyn respectfully requests that this Honorable Court award the following relief:

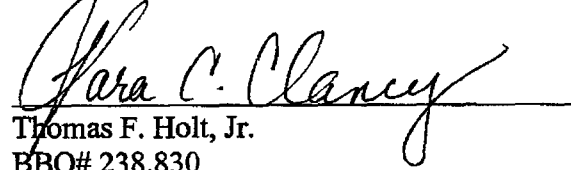
- (1) a declaration that Galaxy is required to defend and indemnify Artesyn, including payment of attorneys' fees, in connection with the VLT Action;
- (2) specific performance of the Agreement;
- (3) the attorneys' fees and costs Artesyn has expended in the defense of the VLT Action to date;
- (4) any amount Artesyn becomes legally obligated to pay as the result of the VLT Action, including, *inter alia*, the amount of any settlement with VLT or any judgment rendered against Artesyn;
- (5) attorneys' fees and costs incurred in bringing this action; and
- (6) such other and further relief as this Court deems just and appropriate.

JURY TRIAL DEMANDED

Dated: April 9, 2004

Respectfully submitted,

KIRKPATRICK & LOCKHART LLP

A handwritten signature in cursive script, reading "Tara C. Clancy", is written over a horizontal line.

Thomas F. Holt, Jr.  
BBO# 238,830

Tara C. Clancy  
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Attorneys for Artesyn North America, Inc.

## PRODUCT DEVELOPMENT AND LICENSE AGREEMENT

THIS AGREEMENT, made and entered into this 16 day of December, 1994, by and between ZYTEC CORPORATION, a Minnesota corporation ("Zytec"), and GALAXY POWER, INC., a Massachusetts corporation ("Galaxy").

### BACKGROUND

FIRST. Zytec is a leading manufacturer and supplier of power supplies for, among other things, computers, data processors, and information processing units.

SECOND. Zytec and Galaxy each possess expertise with respect to distributed power architecture solutions for the power supply industry.

THIRD. Galaxy has designed certain Proprietary Products (as that term is hereinafter defined).

FOURTH. Zytec and Galaxy mutually believe in the business potential of the Proprietary Products as well as future products that may be designed by Galaxy.

FIFTH. Subject to the terms and upon conditions herein contained, and based upon the representations and warranties of Galaxy set forth herein, Zytec desires to make, have made, use, market, and sell the Proprietary Products, and Galaxy is willing to grant Zytec a nonexclusive license for such purposes.

NOW, THEREFORE, in consideration of the foregoing premises and further in consideration of the mutual covenants, conditions and agreements contained in this Agreement and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties to this Agreement hereby agree and undertake as follows:

### ARTICLE I

#### DEFINITIONS

1. DEFINITIONS. As used herein, the following terms shall have the following meanings (such meanings to be equally applicable to both the singular and plural forms of the terms defined):

a. Agreement. "Agreement" shall mean this Agreement (together with all Exhibits, Schedules, Attachments, Appendices and Addenda) as the same may be amended, modified or supplemented from time to time.

b. Confidential Information. "Confidential Information" shall mean and include any and all drawings, specifications, samples, documents, practices, policies, trade secrets, procedures, financial data, accounting data, technical data, know-how (including, without limitation, the Licensed Know-How) and any and all other information relating to Zytec or Galaxy, which has been or is provided or disclosed to by either party to the other or any of its employees or agents before or after the date of this Agreement.

Notwithstanding anything contained in this Agreement to the contrary, "Confidential Information" shall not include information that (i) is established by written evidence to be known to the receiving party prior to the date of this Agreement; (ii) becomes generally available to the public or the receiving party through no fault of the receiving party; or (iii) is disclosed by the party that owns such information to a third party without disclosure restrictions similar to those contained in this Agreement.

- c. Effective Date. "Effective Date" shall mean the date first written above.
- d. Front-End Modules. "Front-End Modules" shall have the meaning as set forth in Article II, Section 8 hereof.
- e. Future DPA Products. "Future DPA Products" shall have the meaning as set forth in Article II, Section 8 hereof.
- f. Generation 2 Modules. "Generation 2 Modules" shall have the meaning as set forth in Article II, Section 8 hereof.
- g. Licensed Know-How. "Licensed Know-How" shall mean the Proprietary Rights, together with any improvements, enhancements, updates or other variations of such Proprietary Rights, together with all of Galaxy's present and future specialized, novel and unique techniques, inventions, practices, knowledge, skill, expertise and other proprietary information relating to the Proprietary Products.
- h. Permitted Uses. "Permitted Uses" shall mean use of the Licensed Know-How by Zytec to (i) make, have made, use, market and sell Proprietary Products under trade names and trademarks owned by Zytec; (ii) make, have made, use, market and sell Proprietary Products on a private label basis for Ericsson Components, A.B; and (iii) design, make, have made, use, market and sell its own distributed power architecture products and other related power supply products.
- i. Phase Gate 3. "Phase Gate 3" shall mean Zytec's acceptance criteria for new product development as applied to each of the Proprietary Products, and as more fully documented on Appendix C attached hereto.
- j. Phase Gate 4. "Phase Gate 4" shall mean Zytec's acceptance criteria for new product development as applied to each of the Proprietary Products, and as more fully documented on Appendix D attached hereto.
- k. Product Acceptance. "Product Acceptance" shall mean, with respect to each of the Proprietary Products, acceptance of such Proprietary Product by Zytec through Phase Gate 4 of Zytec's standard new product development process.
- l. Proprietary Products. "Proprietary Products" shall mean, collectively, the following products, each incorporating the Proprietary Rights and conforming to the

prototypes previously delivered by Galaxy to Zytec (except as further modified in accordance with the terms and conditions of this Agreement):

- (i) ORION 150W Module;
- (ii) STAR 200W Module; and
- (iii) PEGASUS 300W Module.

m. Proprietary Rights. "Proprietary Rights" shall mean all design elements of the Proprietary Products that are proprietary to Galaxy, namely the unique circuits and packaging techniques identified in Appendix A attached hereto, together with any corresponding patents or patent applications filed in the United States or in other countries, any reissue applications, continuation applications and continuation-in-part applications filed thereon in the United States or any foreign country and any patents issuing thereon.

2. RELATED DOCUMENTS. All of the terms defined in this Agreement shall have the defined meanings when used in any Exhibit, Schedule, Attachment, Appendix or Addendum hereto or in any document made or otherwise delivered pursuant to this Agreement, unless the context otherwise requires.

## ARTICLE II

### PRODUCT DEVELOPMENT

1. PROPRIETARY PRODUCTS. Galaxy shall, at its expense, produce and deliver to Zytec, in accordance with the product specifications set forth in Appendix B attached hereto and a delivery schedule to be agreed upon by the parties, two (2) functioning prototypes of each of the Proprietary Products and a document package for each of the Proprietary Products consisting of (i) etched drawings; (ii) component placement drawings; (iii) schematics; and (iv) a bill of material. Galaxy shall also provide to Zytec, at no additional cost to Zytec, all necessary engineering support required to allow Zytec to manufacture each of the Proprietary Products, including, without limitation, all necessary engineering support in connection with (i) Product Acceptance through Phase Gate 4 of Zytec's standard new product development process; (ii) successful completion of all applicable federal, state and industry regulation agency approvals; and (iii) compliance with mutually acceptable product specifications. Once a Proprietary Product has passed Product Acceptance, any additional engineering support by Galaxy shall be rendered in accordance with the terms and conditions set forth in Section 2 of this Article II.

2. ADDITIONAL ENGINEERING SUPPORT BY GALAXY. In addition to Galaxy's obligations under Section 1 of this Article II, Galaxy shall provide engineering support as requested by Zytec in connection with its manufacturing process following Product Acceptance or in connection with any changes to the Proprietary Products requested by Zytec following Product Acceptance. Zytec shall pay Galaxy for engineering services rendered in accordance with this Section 2 of Article II during the 12-month period following the Effective Date at the hourly rate of \$50.00. Following expiration of the 12-month period commencing on the

Effective Date, Zytec shall pay Galaxy for such engineering services at Galaxy's then current contract engineering rates, subject to further negotiation between the parties. Additionally, Zytec shall reimburse Galaxy for travel expenses incurred in connection with the provision of engineering services by Galaxy in accordance with this Section 2 of Article II; provided, however, that such travel expenses are pre-approved in writing by Zytec.

3. ENGINEERING SUPPORT BY ZYTEC. Zytec agrees to provide engineering support to Galaxy, upon request, and Galaxy shall pay Zytec for such engineering services rendered during the 12-month period following the Effective Date at the hourly rate of \$50.00. Following expiration of the 12-month period commencing on the Effective Date, Galaxy shall pay Zytec for such engineering services at Zytec's then current contract engineering rates, subject to further negotiation between the parties. Additionally, Galaxy shall reimburse Zytec for travel expenses incurred in connection with the provision of engineering services by Zytec; provided, however, that such travel expenses are pre-approved in writing by Galaxy.

4. MANUFACTURING. Upon Product Acceptance, Zytec shall be responsible for the manufacturing of all the Proprietary Products to be produced in accordance with the terms and conditions of this Agreement. Zytec shall be solely responsible for all testing and manufacturing costs, other than the engineering support to be provided by Galaxy as set forth in Section 1 of this Article II, including, without limitation, (i) soft and hard tooling costs; (ii) safety testing and agency submittal costs; (iii) capital equipment required to manufacture and test the Proprietary Products at Zytec locations; (iv) material costs incurred in connection with introduction of the Proprietary Products into the market; (v) burn-in equipment to be located at Zytec locations; and (vi) costs incurred in connection with supplier and/or component evaluation and selection.

5. USE OF SUBCONTRACTORS OR AFFILIATES. The parties hereto acknowledge and agree that Zytec intends to employ one or more subcontractors or other third parties in connection with the production of the Proprietary Products; provided, however, Zytec shall not provide the Licensed Know-How to any subcontractor, affiliate or third party without the express written consent of Galaxy.

6. MATERIALS SUPPORT. Zytec will assist Galaxy in the purchasing of prototype materials and will, upon request from Galaxy, sell such materials to Galaxy at Zytec's cost plus material overhead plus freight charges.

7. SALE OF PROPRIETARY PRODUCTS BY ZYTEC TO GALAXY. Zytec will manufacture Proprietary Products for Galaxy at an 18% mark-up over Zytec's material, labor and associated burden costs.

8. FUTURE PRODUCT DEVELOPMENT. In addition to the parties' obligations under this Agreement with respect to the Proprietary Products, Galaxy and Zytec will cooperate with each other in connection with the development of new products in accordance with mutually acceptable specifications, including (i) technologically advanced versions of the Proprietary Products ("Generation 2 Modules"); (ii) advanced AC/Vbus PFC modules ("Front-End Modules"); and (iii) other proprietary distributed power architecture products ("Future DPA Products"). Zytec shall have the first right to acquire a license from Galaxy to make, have made, use, market and sell the Generation 2 Modules, the Front-End Modules and the Future



DPA Products, all upon such terms and conditions that shall be subject to future negotiations. Nothing contained herein is intended to constitute, nor shall it be interpreted as constituting, a financial commitment on the part of Zytec with respect to the design or subsequent manufacturing of the Generation 2 Modules, Front-End Modules and/or Future DPA Products. Notwithstanding anything contained herein to the contrary (i) Galaxy acknowledges and agrees that Zytec shall have the right to independently design its own distributed power architecture products and other related power supply products and that Zytec shall be the sole and absolute owner of all rights to such products; and (ii) Galaxy shall be entitled to develop products for the electronic market other than distributed power architecture products; provided, however, that Galaxy shall commit all necessary time and resources required to timely fulfill its obligations under this Agreement.

### ARTICLE III

#### PROPRIETARY RIGHTS

1. PROPRIETARY RIGHTS. Zytec acknowledges and agrees that Galaxy shall be the sole and exclusive owner of the Proprietary Rights, subject to the license granted to Zytec hereunder.
2. RIGHTS RESERVED. All rights in the Proprietary Rights, other than those granted to Zytec by this Agreement, are hereby reserved by Galaxy.
3. PATENTS. Any design patents covering the Proprietary Products shall be owned by Galaxy and Galaxy shall be solely responsible for the cost of obtaining such design patents.
4. PROTECTION OF PROPRIETARY RIGHTS. Zytec shall immediately disclose to Galaxy, and Galaxy shall immediately disclose to Zytec, any facts or circumstances from which it could be reasonably concluded that a third party is infringing on the Proprietary Rights. Galaxy shall prosecute all substantial claims of infringement of the Proprietary Rights at Galaxy's own expense. If the infringement claim is one that cannot by its nature be prosecuted solely by Galaxy, Zytec shall make available, or cause to be made available, all information and assistance that Galaxy may reasonably request. In the event Galaxy fails, for whatever reason, to timely prosecute all claims of infringement of the Proprietary Rights for which it has notice, then Zytec shall be entitled to prosecute such claims in its own name, at its own expense, and Zytec shall be entitled to retain any and all recoveries from said prosecution, whether by settlement, judgment or otherwise. If the infringement claim is one that cannot by its nature be prosecuted solely by Zytec, Galaxy shall make available, or cause to be made available, all information and assistance that Zytec may reasonably request.
5. PROPRIETARY RIGHTS INDEMNITY. Galaxy shall indemnify, hold harmless, and defend Zytec, its agents, officers, and employees against any and all claims made against Zytec, its agents, officers, and employees that use of the Licensed Know-How infringes any license, copyright, trademark, trade secret, patent, or other proprietary right, and hold Zytec, its agents, officers, and employees harmless against all damages, judgments, and attorneys' fees arising out of the foregoing; provided, however, that Zytec shall give Galaxy prompt written notice of such claims.



6. **OFFSET.** Zytec shall be entitled to offset the amount of any development fee, any royalty payments, or any other amounts due to Galaxy under this Agreement against the indemnity obligations of Galaxy under this Article III.

7. **NONDISCLOSURE OF CONFIDENTIAL INFORMATION.** Galaxy and Zytec both acknowledge and agree (i) that the Confidential Information provided by the other party to it, its employees or agents, is the sole property of the disclosing party, absolutely and forever; (ii) that the unauthorized disclosure by the receiving party of any Confidential Information will cause irreparable harm to the disclosing party; (iii) that the receiving party shall not use or copy any of the Confidential Information of the disclosing party, or any other trade secret, business policy or secret information relating to the other party, except for the sole and exclusive purpose of using such Confidential Information as provided by this Agreement; and (iv) that the receiving party shall not disclose, make available or divulge any of the Confidential Information, or any other trade secret, business policy or other secret information pertaining to the other party to any third party except pursuant to the prior written consent of the disclosing party. Without limiting the generality of the foregoing, the receiving party will only disclose the Confidential Information of the disclosing party to its employees who are directly involved in using such Confidential Information as provided by this Agreement. The receiving party agrees to promptly advise the disclosing party of any misappropriation or misuse by any individual or entity of any Confidential Information that may come to its attention.

8. **PUBLICITY.** Except as required by law or legal process or in connection with a party seeking legal, accounting or other advice, neither party shall disclose the terms and conditions of this Agreement or any activities associated herewith or therewith without the prior written consent of the other party, which consent shall not be unreasonably withheld.

#### ARTICLE IV

##### GRANT OF LICENSE

1. **LICENSE.** Upon the terms and conditions set forth herein, Galaxy hereby grants to Zytec, and Zytec hereby accepts, a nonexclusive, perpetual, worldwide license to use the Licensed Know-How for Permitted Uses.

2. **TERM.** Except as otherwise provided in this Agreement, the term of this Agreement and the licenses granted hereunder shall commence on the Effective Date of this Agreement and shall continue until Zytec shall cease all Permitted Uses of the Licensed Know-How.

#### ARTICLE V

##### CONSIDERATION

1. **ADVANCE.** Zytec shall pay to Galaxy a refundable advance in the amount of Twenty-Five Thousand and no/100 Dollars (\$25,000.00) upon execution of the Agreement by both parties. Such advance shall be deemed an advance to Galaxy of the first Twenty-Five Thousand and no/100 (\$25,000.00) of the initial license fee payable under Article V, Section 2 below and shall be refunded to Zytec by Galaxy in the event Galaxy fails to deliver the prototypes for at

least one (1) of the Proprietary Products in accordance with Article II, Section 1 of this Agreement and this Agreement is terminated by Zytec pursuant to Article VII, Section 2 below on account of such failure or other breach by Galaxy.

2. **LICENSE FEES.** Zytec shall pay to Galaxy an initial license fee under this Agreement in the amount of One Hundred Thousand and no/100 Dollars (\$100,000.00) for each of the three (3) Proprietary Products (i.e., \$300,000.00 in the aggregate), which shall be paid (on a product-by-product basis) upon verification by Zytec that the two (2) prototypes and drawing package (delivered by Galaxy pursuant to Article II, Section 1 of this Agreement) meet the agreed upon product specifications (which verification shall be completed by Zytec within one (1) week after receipt of the prototypes and drawing package by Zytec). Zytec shall pay to Galaxy an additional license fee in the amount of Fifty Thousand and no/100 Dollars (\$50,000.00) per Proprietary Product (i.e. \$150,000.00 in the aggregate), which shall be paid (on a product-by-product basis) upon such Proprietary Product passing Phase Gate 3 and Fifty Thousand and no/100 Dollars (\$50,000.00) per Proprietary Product (i.e., \$150,000.00 in the aggregate), which shall be paid (on a product-by-product basis) upon Product Acceptance. Accordingly, the aggregate license fee to be paid by Zytec to Galaxy pursuant to the terms of this Agreement will be \$600,000.00 in the aggregate. Thereafter, Zytec shall have no further obligation to pay royalties, development fees, license fees or the like to Galaxy in connection with the licenses granted hereunder and the licenses granted hereunder shall be deemed to be fully paid up.

3. **TAXES.** Galaxy shall be responsible for the payment of any and all applicable taxes based or measured upon any and all amounts due and payable by Zytec to Galaxy hereunder.

## **ARTICLE VI**

### **WARRANTIES**

1. **WARRANTIES OF GALAXY.** Galaxy hereby represents and warrants to Zytec that:
  - a. Galaxy has the right to enter into this Agreement, to grant to Zytec the rights and licenses set forth herein, and to perform all obligations of this Agreement;
  - b. Execution, delivery, and performance of this Agreement by Galaxy will not constitute a breach of any agreement, judgment, award, law, rule, or regulation to which Galaxy is bound;
  - c. Galaxy is the owner of the entire right, title and interest in the Licensed Know-How;
  - d. Galaxy has the sole right to grant licenses under the Licensed Know-How and has not previously granted any rights thereunder that would interfere with any rights granted Zytec under this Agreement;
  - e. Galaxy is not aware of any facts or circumstances from which it could reasonably be concluded that any of the Licensed Know-How infringes on any patent, copyright, trade secret or other proprietary right of any third party; and

f. Galaxy is not aware of any facts or circumstances from which it could reasonably conclude that a third party is infringing any of the Licensed Know-How.

2. WARRANTIES OF ZYTEC. Zytec hereby represents and warrants to Galaxy that:

a. Zytec has the full right, power and authority to enter into and perform its obligations under this Agreement; and

b. Execution, delivery, and performance of this Agreement by Zytec will not constitute a breach of any agreement, judgment, award, law, rule, or regulation to which Zytec is bound.

## ARTICLE VII

### TERMINATION

1. TERMINATION BY GALAXY. In the event Zytec defaults in making a payment hereunder, then Galaxy may, at its option, cancel and terminate this Agreement and the rights under the Licensed Know-How, by giving Zytec thirty (30) days' written notice; provided, however, that if Zytec shall correct the default within thirty (30) days after such notice, then said notice shall cease to be operative and this Agreement shall continue in full force and effect as if such default had not occurred.

2. TERMINATION BY ZYTEC. In the event of a breach by Galaxy of any of the covenants, agreements, representations or warranties contained herein, then Zytec may, at its option, cancel and terminate this Agreement by giving Galaxy thirty (30) days' written notice; provided, however, that if Galaxy shall correct such breach within thirty (30) days after such notice, then said notice shall cease to be operative and this Agreement shall continue in full force and effect as if such default had not occurred.

3. EFFECT OF TERMINATION. Upon termination or expiration of this Agreement, for whatever reason, all provisions relating to proprietary property, patents, copyrights, trademarks, or other intellectual property rights shall remain in full force and effect. Notwithstanding the termination or expiration of this Agreement, each of the parties hereto shall be required to carry out any provision hereof that contemplates performance subsequent to such termination; and such termination shall not affect any liability or other obligation that shall have accrued prior to such termination, including, but not limited to, any liability for loss or damage on account of a prior default. Any rights and remedies provided in this Agreement shall be cumulative and in addition to all rights and remedies available at law and in equity.

## ARTICLE VIII

### MISCELLANEOUS PROVISIONS

1. BENEFIT. Except as otherwise provided herein, this Agreement shall inure to the benefit of and shall be binding upon the parties hereto and their respective heirs, executors, administrators, representatives, sublicensees, successors and assigns.

2. ASSIGNMENT OR SUBLICENSE. This Agreement and all rights and licenses granted or obligations incurred hereunder are personal to Zytec and shall not, without the prior written consent of Galaxy, be assigned, made subject to a security interest, sublicensed, or otherwise encumbered by Zytec or by operation of law.
3. WAIVER, MODIFICATION OR AMENDMENT. Unless otherwise expressly provided in this Agreement and any documents expressly referred to herein, no waiver, modification or amendment of any term, condition or provision of this Agreement shall be valid, binding or of any effect unless made in writing, signed by the parties hereto or their duly authorized representatives and specifying with particularity the nature and extent of such waiver, modification, or amendment. Any waiver by any party of any provision hereof shall not affect or impair any other provision hereof. The failure of any party to enforce at any time any of the provisions of this Agreement shall not be construed to be a waiver of the right of such party to subsequently enforce any such provisions.
4. NOTICES. All notices, requests or other communications from either party hereto to the other shall be in writing and shall be considered to be delivered or served if sent by a nationally recognized express delivery service or by first class certified or registered mail, return receipt requested, postage prepaid to the party at its address as set forth on the signature page hereto, or to such other address as such party may hereafter designate by written notice to the other party.
5. LEGAL RELATIONSHIP. Zytec and Galaxy hereby acknowledge and agree that nothing contained in this Agreement shall be deemed to create an employment, agency, franchise, or other relationship between Zytec and Galaxy for any purpose whatsoever and that no relationship is intended or created hereby other than the relationship of independent contractors.
6. COUNTERPARTS. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but together which shall constitute one and the same instrument.
7. HEADINGS. Section headings used herein are for convenience purposes only and shall in no way be construed to be a part of this Agreement or as a limitation of the scope of the particular sections to which such headings refer.
8. INTERPRETATION AND SEVERANCE. The provisions of this Agreement shall be applied and interpreted in a manner consistent with each other so as to carry out the purposes and intent of the parties hereto, but if for any reason any provision hereof is determined to be unenforceable or invalid, such provision or such part hereof as may be unenforceable or invalid shall be deemed severed from this Agreement, and the remaining provisions shall be carried out with the same force and effect as if the provision or part thereof had not been a part of this Agreement.
9. GOVERNING LAW. This Agreement shall be governed by and construed in accordance with the laws of the State of Minnesota.

10. **ENTIRE AGREEMENT.** This Agreement, including any appendices or exhibits attached hereto or documents expressly referred to herein, contains the entire agreement between Zytec and Galaxy and supersedes and cancels any and all other agreements, whether oral or in writing, between Zytec and Galaxy with respect to the matters referred to herein.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the date first written above.

ZYTEC CORPORATION

By: 

(Signature)

Name: JOHN M. STEEL

(Name Typed or Printed)

Its: VICE PRESIDENT

(Title Typed or Printed)

Address:

Zytec Corporation  
7575 Market Place Drive  
Eden Prairie, Minnesota 55344  
Attn: John Steel

STP:132184-1

GALAXY POWER, INC.

By: 

(Signature)

Name: HOWARD E. KAEPPLEIN

(Name Typed or Printed)

Its: PRESIDENT

(Title Typed or Printed)

Address:

Galaxy Power, Inc.  
626 Main Street  
Bolton, Massachusetts 01740  
Attn: Howard E. Kaepplein

APPENDIX A

**PROPRIETARY RIGHTS**

Pursuant to the Product Development and License Agreement dated as of the 16 day of December, 1994 (the "Agreement"), by and between ZYTEC CORPORATION, a Minnesota corporation ("Zytec"), and GALAXY POWER, INC. a Massachusetts corporation ("Galaxy"), the following is made a part thereof:

1. **DEFINITIONS.** Except as otherwise expressly set forth herein, all capitalized terms that are defined in the Agreement shall have the same meaning herein as assigned to them in the Agreement.
2. **PROPRIETARY RIGHTS.** Zytec and Galaxy agree that the following circuits and packaging techniques are unique to Galaxy and shall constitute "Proprietary Rights" within the meaning set forth in Article I of the Agreement:

**[TO BE PROVIDED]**

3. **COUNTERPARTS.** This Appendix may be executed in one or more counterparts, each of which shall be deemed an original, but together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have executed this Appendix A as of the \_\_\_\_ day of December, 1994.

ZYTEC CORPORATION

By: 

(Signature)

Name: JOHN M. SORA

(Typed or Printed)

Its: VICE PRESIDENT

(Title Typed or Printed)

GALAXY POWER, INC.

By: 

(Signature)

Name: HOWARD E. KAEPPLEIN

(Typed or Printed)

Its: PRESIDENT

(Title Typed or Printed)

APPENDIX B

**PHASE GATE 3**

**Phase Gate 3 Action Items**

- Safety Report Written (tests performed and report by Zytec)
- CAD Design Completed
- Manufacturing Plan Completed (Zytec)
- Pre-Production Parts Ordered (Zytec)
- Burn-In Rack Built... if required (Zytec)
- Commence Safety Agency Compliance  
(tests performed by Zytec, design compliance Galaxy responsibility)
  - UL, CSA, TUV
- Specification Compliance Complete
  - Customer Verification Test Complete (tests performed by Zytec)
  - Test Report/Exception Report Complete (tests performed by Zytec)
  - Strife Testing Complete (tests performed by Zytec)
  - Cpk Assessment Complete (tests performed by Zytec)
  - Pass/Fail Decision Complete (tests performed by Zytec)
- MTBF Prediction Complete (data from Galaxy, program run by Zytec)
- Material Plan for Limited Production Build Complete (Zytec)
- Product Costs Reviewed (joint)
- Engineering Documentation Released (joint)
- Phase Gate Review Completed (joint)

Action items are the responsibility of Galaxy except as noted.

APPENDIX C

**PHASE GATE 4**

**Phase Gate 4 Action Items**

- Pre-Production Units Tested (Zytec)
- Production Tooling Released (Zytec)
- Limited Production Buy Complete (Zytec)
- Burn-In Data Evaluation (Zytec)
- Pre-Production Build Start (Zytec)
- UL, CSA, TUV Safety Agency Approvals Complete (submittal Zytec, compliance Galaxy)
- Tooling/Test Equipment Complete (Zytec)
- Critical Test Parameters Defined
- Manufacturing Process and Control Complete (Zytec)
- Production Process Flow Diagram Complete (Zytec)
- Production Plan for Unlimited Production Complete (Zytec)
- Material Plan for Unlimited Production Complete (Zytec)
- Cost Target Review/Compliance to Plan Complete (joint)
- Cpk 1.5 First Article Inspection Complete (performed by Zytec)
- Initiate Production Build (Zytec)
- Phase Gate Review Complete (joint)

Action items are the responsibility of Galaxy except as noted.



**GLX POWER** Real Solutions for Distributed Power Architectures **GLX/CA/SEC/ES Rev. x06**

### INPUT SPECIFICATIONS

Parameter	Symbol	Min	Typical	Max	Units
Operating Input Voltage	$V_i$	36	48	75	VDC
Inrush Current	$I_{inrush}$			8	A pk
Inrush transient	$P_t$			4	A <sup>2</sup> s
Input Ripple Rejection (120 Hz)			60		dB
No-load input Power			1	1.5	W

### OUTPUT SPECIFICATIONS

Parameter	Symbol	Min	Typical	Max	Units
<b>VOLTAGE</b>	$V_o$		3.3, 5.0 12.0, 15.0		Volts
Total Regulation (Load, line, initial, drift, temp)				2	% $V_{o,nom}$
Output Voltage Set point ( $V_i = 48V$ , $I_o = \text{full load}$ , $T_c = 25^\circ C$ )	$V_{o,set}$	99	100	101	% $V_{o,nom}$
Output Regulation Line ( $V_i = 36V$ to $72V$ )			0.1	0.3	%
Load ( $I_o = 0A$ to $I_{o,max}$ )			0.1	0.5	%
Temp. ( $T_c = 0^\circ C$ to $100^\circ C$ )			0.4	0.8	%
Output Ripple & Noise Voltage RMS				3.3V 5.1V 12V 15V 35 35 50 65	mV rms
Peak-to-peak (5 Hz to 20 Mhz)				100 100 150 150	mV pk-pk
$V_o$ Margin Range ( $V_o = V_{o,nom}$ ; $I_o = I_{o,max}$ )	$V_m$		-35%, +20%		% $V_o$
Remote Sense Compensation				0.6	V

<b>CURRENT</b>	Symbol	Min	Typical	Max	Units
Output Current	$I_o$	0		75W 100W 125W 150W 25 30 15 20 25 30 6 8 10 12.5 5 7 9 10	A
Dynamic Response ( $V_i = 48V$ ) Load change: 25% to 75% $I_{max}$ ( $di/dt = 0.1A/\mu s$ )			3.3V, 5V/ 12V, 15V 150/450 200	3.3V 5.1V 12V 15V 150 150 450 450 250	mV $\mu sec$
Peak deviation					
Settling time (to 1% $V_o$ )					
Current-sharing, Module-module @90% $I_{max}$			3	10	% $I_{avg}$

<b>PROTECTION</b>					
Nominal Current Limit ( $V_{out} = 90\% V_o$ )		105	110	120	% $I_{o,max}$
Output Short-circuit current limit			130	150	% $I_{o,max}$
Over-voltage Shutdown	$V_{sd}$	120	125	130	% $V_{o,nom}$
<b>MISCELLANEOUS</b>					
Turn-on time from enable (resistive load) ( $V_i = 60V$ , $I_o = I_{max}$ )			10	15	ms
Isolation capacitance (500VDC)			3,000		pF
Isolation Resistance (500VDC)		10			Mohms
Operating Baseplate Temperature		-20		90	degC
Overttemperature shutdown ( $T_{Baseplate}$ )		105	110	120	degC
Enable Low ( $V_{IL}$ , $I_{IL}$ )				0.8V, 1mA	
Enable High ( $V_{IH}$ ; for $Pri\_En$ & $Sec\_En$ )				12, 5	V

**ORION SERIES****3.3V/5V/12V/15V Outputs**  
**2.45" x 2.45" x 0.5" 54W/in<sup>3</sup> 88% Efficiency****Best-in-class, High Density DC-DC Converter Modules 36-72VDC Input, 50W to 150W**

The *ORION SERIES* uses innovative circuit design and packaging techniques to provide up to 150W in half the footprint of other commercially available power converter modules without sacrificing essential features or performance. Since they incorporate all the necessary filtering, protection, and sharing circuitry in addition to having efficiencies to 88%, these modules offer the highest utilization of scarce PCB real estate in a system design compared to any other converter module available.

The *ORION SERIES* comprises a core product in Galaxy Power's offering of *Real Solutions for Distributed Power Architectures* - a range of power conversion solutions that are specifically designed to meet the needs of the system designer.

*General Features*

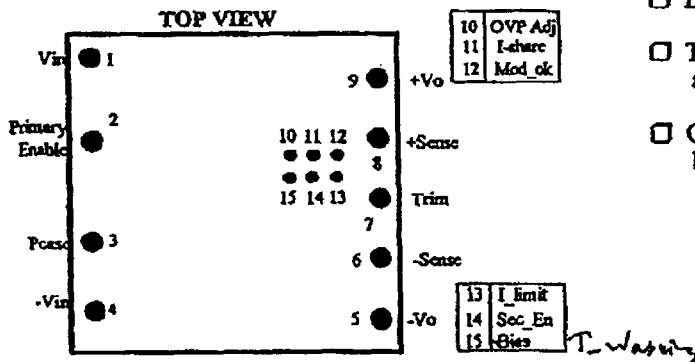
- ☐ Full 150 Watts (30A) at 5 Vout
- ☐ Meets UL, CSA, VDE, BABT requirements
- ☐ Fixed-frequency Operation
- ☐ Accurate current-sharing with built-in fail-safe feature
- ☐ Internal common-mode and differential mode filtering - module meets VDE0871 Class A and CISPR input noise limits
- ☐ MTBF: 1,000,000 hours (MIL-STD-217)
- ☐ Six-side EMI shield
- ☐ Fast transient response

*Control Features*

- ☐ Primary- and Secondary-Referenced Enable inputs
- ☐ Pin-programmable output voltage  
5V → 3.3V, 3.3 → 2.1V, 12V → 9V
- ☐ Remote-sense allows application in N+1 redundant configurations
- ☐ Adjustable current limit
- ☐ Module OK signal
- ☐ Adjustable OVP limit
- ☐ Output voltage trim

*Protection Features*

- ☐ Latching Over-Voltage Protection
- ☐ True "brick-wall" current limiting with automatic recovery
- ☐ Over-temperature protection at 110°C base-plate temperature

*Real Solutions for Distributed Power*

# STAR SERIES

**High Density DC-DC Converter Modules 36-72VDC Input, 100W to 200W****3.3V/5V/12V/15V Outputs****2.45" x 4.8" x 0.5" 34W/in<sup>3</sup> 87% Efficiency**

## General Features

- ☐ High Efficiency (>84% @V<sub>o</sub> = 5.0V)
- ☐ Fixed-frequency Operation
- ☐ Accurate current-sharing with built-in fail-safe feature
- ☐ Internal Common-mode and differential mode filtering
- ☐ MTBF: 1,000,000 hours (MIL-STD-217)
- ☐ Meets UL, CSA, VDE, BABT requirements
- ☐ Fast transient response
- ☐ Latching Over-Voltage Protection
- ☐ True "brick-wall" current limiting with automatic recovery

The *STAR SERIES* is the superior solution to the 200W power component industry workhorse. Unlike other commercially available modules, this series comes with ALL the necessary control and status signals required to use power component modules successfully in any electronic system. With a high-efficiency, high-reliability design that incorporates on-board input filtering, the *STAR SERIES* is the most cost-effective solution for Distributed Power Architectures.

## Control Features

- ☐ Primary- and Secondary-Referenced Enable inputs
- ☐ Current-Share and Remote-sense makes application in parallel and N+1 redundant configurations easy
- ☐ Adjustable current limit
- ☐ Module OK signal
- ☐ Output voltage trim

**PRELIMINARY**

## BOTTOM VIEW

-Vin  
Vin  
P<sub>Enable</sub>  
Case

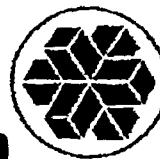
1  
2  
3  
4

20 18 16 14  
19 17 15 13

5 +V<sub>o</sub>  
6 +V<sub>o</sub>  
7 -V<sub>o</sub>  
8 -V<sub>o</sub>  
9 -Sense  
10 +Sense  
11 I-share  
12 Trim

13 Mod\_ok  
14 T\_warning  
15 I\_limit  
16 DCOK

17 S\_Enable  
18 Margin  
19 Bias  
20 V-Adj

**GALAXY POWER***Real Solutions for Distributed Power*

**CSLAXY POWER Real Solutions for Distributed Power Architectures. SLAXY SERIES Rev.03**
**INPUT SPECIFICATIONS**

Parameter	Symbol	Min	Typical	Max	Units
Operating Input Voltage	$V_i$	36	48	72	VDC
Inrush Current	$I_{inrush}$			8	A pk
Inrush transient	$t_r$			4	$\mu$ s
Input Ripple Rejection (120 Hz)			60		dB
No-load input Power			1.5	2	W

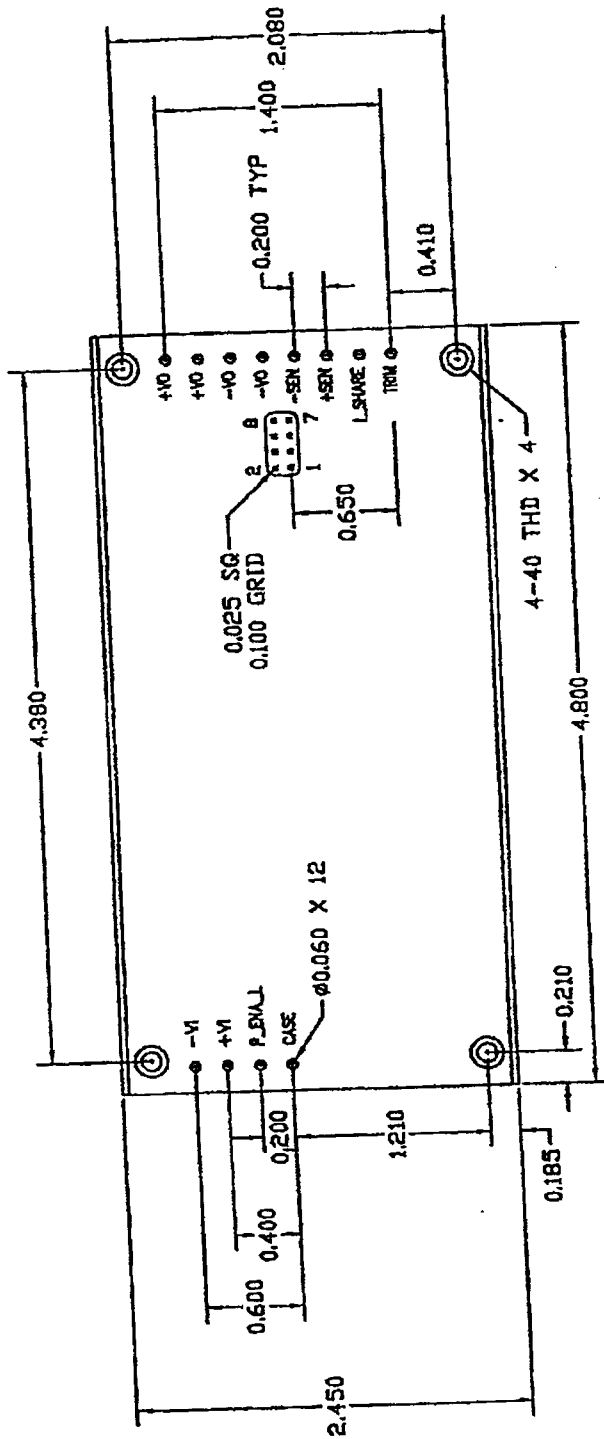
**OUTPUT SPECIFICATIONS**

Parameter	Symbol	Min	Typical	Max	Units
<b>VOLTAGE</b>	$V_o$		3.3, 5.0 12.0, 15.0		Volts
Total Regulation (Load, line, initial, drift, temp)				$\pm 2.5$	% $V_{o,nom}$
Output Voltage Set point ( $V_i = 48V$ , $I_o = \text{full load}$ , $T_c = 25^\circ C$ )	$V_{o,set}$	99	100	101	% $V_{o,nom}$
Output Regulation Line ( $V_i = 38V$ to $60V$ ) Load ( $I_o = 0A$ to $I_{o,max}$ ) Temp. ( $T_c = 0^\circ C$ to $100^\circ C$ )			0.05 0.1 0.2	0.1 0.2 1.0	% % %
Output Ripple & Noise Voltage RMS Peak-to-peak (5 Hz to 20 Mhz)				3.3V 5.1V 12V 15V 35 50 100 120 100 100 120 150	mV rms mV pk-pk
$V_o$ Margin Range ( $V_o = V_{o,nom}$ , $I_o = I_{o,max}$ )	$V_m$		-35%, +30%		% $V_o$
Remote Sense Compensation				0.5	V

<b>CURRENT</b>	Symbol	Min	Typical	Max	Units
Output Current 3.3V output 5.0V output 12.0V output 15.0V output	$I_o$	0		100W 125W 150W 200 30 35 40 20 30 40 8 12 16 6.7 10 13	A
Dynamic Response ( $V_i = 48V$ ) Load change: 25% to 75% $I_{max}$ ( $di/dt = 0.1A/\mu s$ ) Peak deviation Settling time (to 1% $V_o$ )			100	$\pm 3$ 150	% $V_{o,nom}$ $\mu$ sec
Current-sharing, Module-module @90% $I_{max}$			5	15	% Iavg

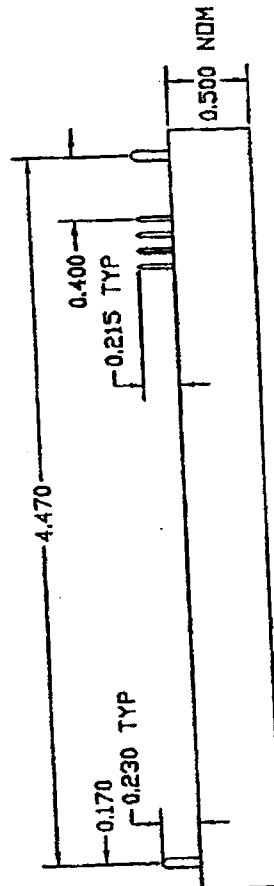
<b>PROTECTION</b>					
Nominal Current Limit ( $V_{out} = 90\% V_o$ )		105	110	120	% $I_{o,max}$
Output Short-circuit current limit			130	150	% $I_{o,max}$
Over-voltage Shutdown	$V_{sd}$	120	125	130	% $V_{o,nom}$
<b>MISCELLANEOUS</b>					
Turn-on time from enable (resistive load) ( $V_i = 60V$ , $I_o = I_{max}$ )			10	15	ms
Isolation capacitance (500VDC)			1,000		pF
Isolation Resistance (500VDC)		10			Mohms
Operating Baseplate Temperature		-20		90	degC
Overtemperature shutdown (TBaseplate)		105	110	120	degC
Enable Low ( $V_{IL}$ , $I_{IL}$ )				0.9V, 1mA	
Enable High ( $V_{IH}$ , for Pri_En & Sec_En)				12, 5	V

# DIMENSIONS AND PINOUT BOTTOM VIEW



## DETAIL SEC SIDE CONTROL SIG CONN

SYNC 1 2 OVP\_ADJ  
 S\_ENALL 3 4 CL\_ADJ  
 L\_AKON 5 6 V\_ADJ  
 MOD\_OK\_L 7 8 TEMP\_WARN\_L



# PEGASUS SERIES

2.45" x 4.6" x 0.5" 3.3V/5V/12V/15V Outputs 54W/in<sup>3</sup> 87% Efficiency  
High Density DC-DC Converter Modules 36-72VDC Input, 200W to 300W

The PEGASUS SERIES uses innovative circuit design and packaging techniques to provide up to 300W in output power. This series comes with ALL the necessary control and status signals required to use power component modules successfully in any electronic system. With a high-efficiency, high-reliability design that incorporates on-board input filtering, the PEGASUS SERIES is the most space-efficient solution for Distributed Power Architectures.

## General Features

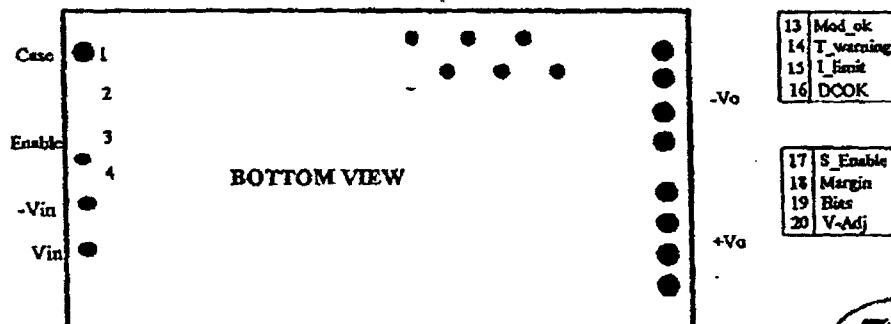
- ☐ Full 300 Watts (60A @ 5V out).
- ☐ Fixed-frequency Operation
- ☐ Accurate current-sharing with built-in fail-safe feature
- ☐ Internal Common-mode and differential mode filtering - module meets VDE0871 Class A and CISPR input noise limits
- ☐ MTBF: 1,000,000 hours (MIL-STD-217E)
- ☐ Meets UL, CSA, VDE, BABT requirements
- ☐ Fast transient response
- ☐ Six-sided EMI shield

## Control and Monitoring Features

- ☐ Primary- and Secondary-Referenced Enable inputs
- ☐ Current-Share and Remote-sense makes application in parallel and N+1 redundant configurations easy
- ☐ Adjustable current limit
- ☐ Thermal shutdown warning
- ☐ Module OK signal
- ☐ Programmable output voltage

## Protection Features

- ☐ Latching Over-Voltage Protection
- ☐ True "brick-wall" current-limiting with automatic recovery
- ☐ Over-temperature protection at 110C base-plate temperature



**GALAXY  
POWER**

*Real Solutions for Distributed Power*

## GALAXY POWER Real Solutions for Distributed Power Architectures G4SDS SER/T3 Rev. 01

## INPUT SPECIFICATIONS

Parameter	Symbol	Min	Typical	Max	Units
Operating Input Voltage	$V_i$	36	48	72	VDC
Inrush Current	$I_{inrush}$			8	A pk
Inrush transient	$i^2t$			4	A <sup>2</sup> s
Input Ripple Rejection (120 Hz)			60		dB
No-load input Power			2	3	W

## OUTPUT SPECIFICATIONS

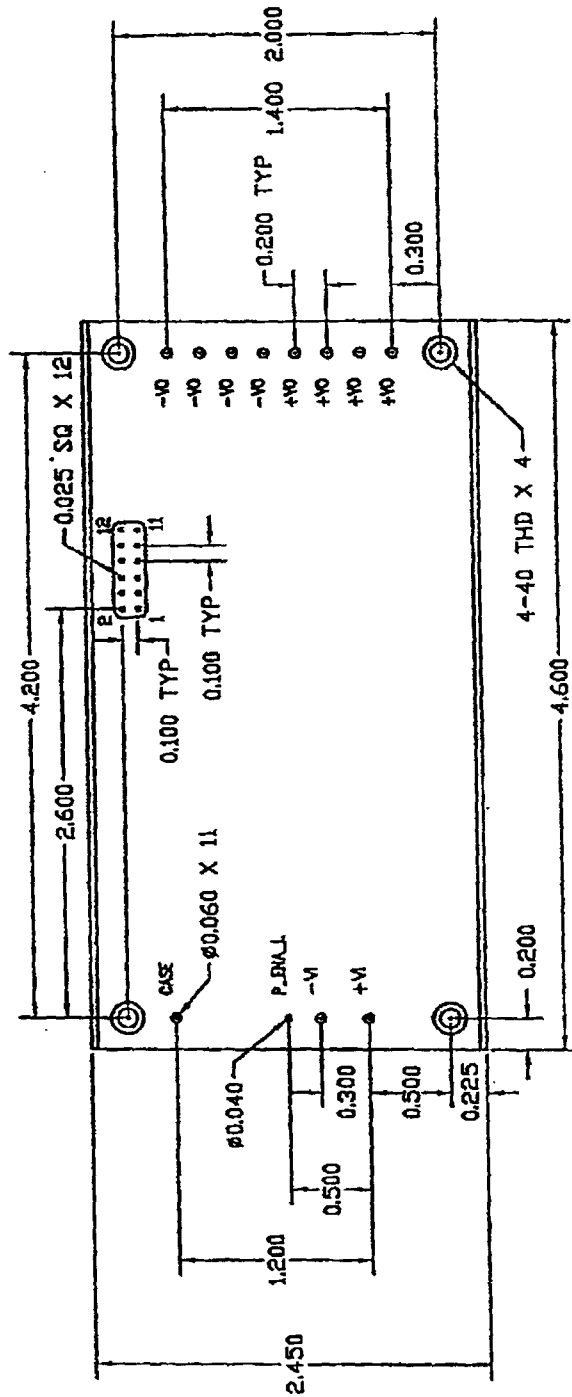
Parameter	Symbol	Min	Typical	Max	Units
<b>VOLTAGE</b>					
Initial Setting	$V_{o,set}$		3.3, 5.0 12.0, 15.0		Volts
Total Regulation (Load, line, initial, drift, temp)				+/- 3	% $V_{o,nom}$
Output Voltage Set point ( $V_i = 48V$ , $I_o = \text{full load}$ , $T_c = 25^\circ C$ )	$V_{o,set}$	99	100	101	% $V_{o,nom}$
Output Regulation Line ( $V_i = 38V$ to $60V$ )			0.1	0.3	%
Load ( $I_o = 0A$ to $I_{o,max}$ )			0.1	0.5	%
Temp. ( $T_c = 0^\circ C$ to $100^\circ C$ )			0.4	0.8	%
Output Ripple & Noise Voltage RMS				3.3V 5.1V 12V 15V 35 35 50 65	mV rms
Peak-to-peak (5 Hz to 20 Mhz)				100 100 150 150	mV pk-pk
$V_o$ Margin Range ( $V_o = V_{o,nom}$ ; $I_o = I_{o,max}$ )	$V_m$		-35%, +20%		% $V_o$
Remote Sense Compensation				0.6	V

CURRENT	Symbol	Min	Typical	Max	Units
Output Current				200W 100W	
3.3V output	$I_o$	0		60	A
5.0V output				40 60	
12.0V output				17 25	
15.0V output				13.3 20	
Dynamic Response ( $V_i = 48V$ )			3.3V, 5V 12V, 15V	3.3V 5V 12V 15V	
Load change: 25% to 75% $I_{max}$ ( $di/dt = 0.1A/\mu s$ )			150/450	150 150 450 450	% $V_{o,nom}$
Peak deviation			200	250	$\mu sec$
Settling time (to 1% $V_o$ )					
Current-sharing, Module-module @90% $I_{max}$			3	10	% $I_{avg}$

PROTECTION					
Nominal Current Limit ( $V_{out} = 90\% V_o$ )		105	110	120	% $I_{o,max}$
Output Short-circuit current limit			130	150	% $I_{o,max}$
Over-voltage Shutdown	$V_{sd}$	120	125	130	% $V_{o,nom}$
<b>MISCELLANEOUS</b>					
Turn-on time from enable (resistive load) ( $V_i = 60V$ , $I_o = I_{max}$ )			10	15	ms
Isolation capacitance (1500VDC)			3,000		pF
Isolation Resistance (1500VDC)		10			Mohms
Operating Baseplate Temperature		-20		90	degC
Overtemperature shutdown ( $T_{Baseplate}$ )		105	110	120	degC
Enable Low ( $V_{IL}$ , $I_{IL}$ )				0.8V, 1mA	
Enable High ( $V_{IH}$ ; for Pri_En)				12	V
Enable High ( $V_{IH}$ ; for Sec_En)		0		2.8V (TTL compatible)	

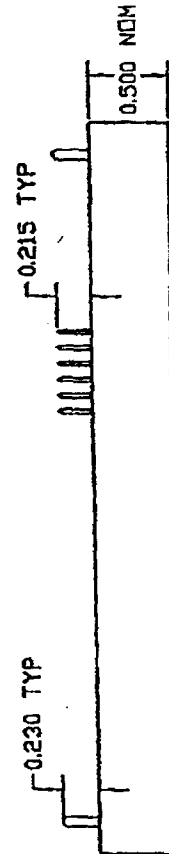


# DIMENSIONS AND PINOUT BOTTOM VIEW



## DETAIL SEC SIDE CONTROL SIG CONN

MOD\_OK 1 2 SYNC  
SYNC 3 4 NU  
CUR\_SHARE 5 6 V\_ADJ  
CL\_ADJ 7 8 TEMP\_WARN  
+SENSE 9 10 CUR\_MON  
S\_ENA 11 12 -SENSE





UNITED STATES DISTRICT COURT  
DISTRICT OF MASSACHUSETTS

\*\*\*\*\*

VLT, Inc.,

Plaintiff,

v.

Artesyn Technologies Inc.,  
Artesyn North America, Inc.,  
Artesyn International Ltd.,  
Artesyn Ireland Ltd.,  
Artesyn Austria GmbH & Co. KG,

Defendants.

CIVIL ACTION  
NO. 01-10238-PBS

DEMAND FOR JURY TRIAL

\*\*\*\*\*

AMENDED COMPLAINT

Plaintiff, VLT, Inc. ("VLT"), as and for its Amended Complaint against defendants, Artesyn Technologies Inc., Artesyn North Ameica, Inc., Artesyn International Ltd., Artesyn Ireland Ltd., and Artesyn Austria GmbH & Co. KG (collectively "Artesyn"), states as follows:

1. Plaintiff brings this patent infringement action against Artesyn based upon Artesyn's unauthorized manufacture, use, importation, sale, and/or offer for sale of products that infringe Plaintiff's patented technology.

**PARTIES**

2. VLT, Inc. ("VLT") is organized under the laws of the State of California with a principal place of business at 560 Oakmead Parkway, Sunnyvale, California 94086. VLT is a wholly-owned subsidiary of Vicor Corporation.

3. Upon information and belief, Artesyn Technologies, Inc. is a corporation organized and existing under the laws of the State of Florida, with a place of business at 7900 Glades Road, Suite 500, Boca Raton, Florida 33434 and an office located at 125 Newbury Street, Suite 100, Framingham, Massachusetts 01701 and is transacting, doing and/or soliciting business and committing acts of patent infringement in this judicial district and elsewhere.

4. Upon information and belief, Artesyn North America, Inc. is a corporation organized and existing under the laws of the State of Delaware, with a place of business in Minneapolis, Minnesota and is transacting, doing and/or soliciting business and committing acts of patent infringement in this judicial district and elsewhere.

5. Upon information and belief, Artesyn International Ltd. is a corporation organized and existing under the laws of the Cayman Islands, with a place of business in Youghal, Ireland and is transacting, doing and/or soliciting business and committing acts of patent infringement in this judicial district and elsewhere.

6. Upon information and belief, Artesyn Ireland Ltd. is a corporation organized and existing under the laws of the Cayman Islands, with a place of business in Youghal, Ireland and is transacting, doing and/or soliciting business and committing acts of patent infringement in this judicial district and elsewhere.

7. Upon information and belief, Artesyn Austria GmbH & Co. KG is a partnership organized and existing under the laws of Austria, with a place of business in Vienna, Austria and is transacting, doing and/or soliciting business and committing acts of patent infringement in this judicial district and elsewhere.

## **JURISDICTION AND VENUE**

8. This is a patent infringement action brought under the patent laws of the United States, 35 U.S.C. § 271 *et seq.* This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331, 1332, and 1338.

9. Venue in this district is proper pursuant to 28 U.S.C. §§ 1391(b), (c) and 1400.

## **COUNT I - PATENT INFRINGEMENT**

10. VLT is the owner of United States Reissue Patent No. Re. 36,098 ("the '098 Patent"), entitled "Optimal Resetting Of The Transformer's Core In Single Ended Forward Converters," a valid patent that was duly and legally issued on February 16, 1999. A copy of the '098 patent is attached hereto as Exhibit A. The '098 Patent is a reissue of United States Patent No. 4,441,146, which was duly and legally issued on April 3, 1984.

11. VLT is the assignee and licensor of the '098 Patent. Vicor Corporation ("Vicor") is the former assignee of and is a licensee under the '098 Patent.

12. Vicor designs, develops, manufactures, markets and sells modular power components and complete power systems for use in converting electric power into a form suitable for use by electronic circuitry. Power converters are required in virtually all electronic products (e.g., personal computers) because commonly available electrical energy sources, such as a wall outlet, cannot typically provide the stabilized, constant, and relatively low values of direct current ("DC") voltage needed by most electronic components (e.g., microprocessors; silicon integrated circuits).

13. Vicor was founded in Massachusetts in 1981 by Dr. Patrizio Vinciarelli. Dr. Vinciarelli and Vicor have developed families of standardized modular power converters that are smaller and more energy efficient than power converters using alternative technologies.

14. Vicor's power supply products have achieved widespread acceptance in the electronics industry. Vicor is an acknowledged leader in the fields of power conversion, power product design and automated manufacturing. Vicor has received many honors in the business and technical press.

15. Artesyn Technologies Inc. is engaged in the manufacture, use, sale and/or offer for sale of electronic power converters with reset circuits which fall within one or more of the claims of the '098 Patent ("Artesyn's Power converters") in this district and elsewhere in the United States.

16. Artesyn North America, Inc. is engaged in the manufacture, use, sale and/or offer for sale of electronic power converters with reset circuits which fall within one or more of the claims of the '098 Patent ("Artesyn's Power converters") in this district and elsewhere in the United States.

17. Artesyn International Ltd. is engaged in the manufacture, use, sale and/or offer for sale of electronic power converters with reset circuits which fall within one or more of the claims of the '098 Patent ("Artesyn's Power converters") in this district and elsewhere in the United States.

18. Artesyn Ireland Ltd. is engaged in the manufacture, use, sale and/or offer for sale of electronic power converters with reset circuits which fall within one or more of the claims of the '098 Patent ("Artesyn's Power converters") in this district and elsewhere in the United States.

19. Artesyn Austria GmbH & Co. KG is engaged in the manufacture, use, sale and/or offer for sale of electronic power converters with reset circuits which fall within one or more of the claims of the '098 Patent ("Artesyn's Power converters") in this district and elsewhere in the United States.

20. By its manufacture, use, sale and/or offer for sale of Artesyn's Power converters, Artesyn Technologies Inc., Artesyn North America, Inc., Artesyn International Ltd., Artesyn Ireland Ltd. and Artesyn Austria GmbH & Co. KG have infringed and continue to infringe one or more claims of the '098 Patent. See Exhibit B, Memorandum and Order, dated January 24, 2001, in *VLT Corporation and Vicor Corporation v. Unitrode Corporation*, 98-cv-11152-PBS, at 12.

21. Artesyn's acts of infringement have been and are being performed with Artesyn's knowledge that Artesyn's Power converters infringe the '098 Patent. These acts of infringement constitute a willful infringement of the '098 Patent.

22. Artesyn's acts of infringement have caused reparable and irreparable damage to VLT and VLT will continue to suffer damage unless Artesyn is enjoined.

#### RELIEF

WHEREFORE, by reason of the foregoing, VLT respectfully requests that the Court:

- A. Enter judgment that Artesyn Technologies Inc., Artesyn North America, Inc., Artesyn International Ltd., Artesyn Ireland Ltd., and Artesyn Austria GmbH & Co. KG have infringed the '098 Patent;
- B. Enter judgment that Artesyn Technologies Inc.'s, Artesyn North America, Inc.'s, Artesyn International Ltd.'s, Artesyn Ireland Ltd.'s, and Artesyn Austria GmbH & Co. KG's acts of patent infringement are willful;
- C. Order Artesyn Technologies Inc., Artesyn North America, Inc., Artesyn International Ltd., Artesyn Ireland Ltd., and Artesyn Austria GmbH & Co. KG to account for and pay to VLT all damages, including lost profits and interest thereon, caused to VLT by defendant's unlawful acts aforesaid;

- D. Award VLT increased damages pursuant to 35 U.S.C. § 284;
- E. Award VLT its interest, costs, and attorneys' fees incurred in this action; and
- F. Grant VLT such other and further relief as the Court may deem just and proper.


**JURY TRIAL DEMAND**

VLT demands a trial by jury on all issues so triable raised herein.

Respectfully submitted,

VLT, Inc.

By its attorneys,

  
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Dated: February 25, 2002

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